

REMARKS

Initially, Applicants thank the Examiner for acknowledging that the formal drawings submitted concurrently with the Amendment dated August 12, 2003, have been accepted.

Claims 1-19 are all the claims pending in the present application, claims 1 and 14 having been amended to recite proper antecedent basis; claim 14 has additionally been amended to recite aspects of the disclosed embodiments with more particularity. Support for the foregoing amendment is found throughout the present application, and in particular at pages 11-15; no new matter has been added. Claims 1-7 stand rejected under 35 U.S.C. §102(b) as anticipated by newly-cited United States Patent (USP) 5,694,212 to Weissman. Claims 8-19 stand rejected under 35 U.S.C. §103(a) as unpatentable over Weissman in view of USP 4,760,385 to Jansson et al. Applicants respectfully traverse the prior art rejections, and request reconsideration and allowance of all the pending claims in light of the following remarks.

As set forth previously on the record, aspects of the present invention are generally related to calibrating an imaging system to correct possible panel misalignment errors. In accordance with some embodiments, a reference slide or data point may be used to obtain a series of measurements which may be compared to expected results. Alignment calibration data collected or otherwise determined in accordance with the present application may be used to determine positioning and orthogonality errors in the scanning system. Specifically with respect to employing calibration data to correct alignment errors, claim 1 recites an element directed to “determining positioning and orthogonality errors from the calibration data,” claim 8 recites an element directed to “applying the adjustment parameters to position a . . . portion of the plurality of specimens within a scan area,” and claim 14 recites using “an adjustment algorithm to modify movement of the staging area to compensate for the calibration data.” As set forth in more detail below, at least the foregoing elements are neither disclosed nor suggested by the references cited.

The Rejection Under 35 U.S.C. §102(b)

As noted above, claims 1-7 stand rejected under 35 U.S.C. §102(b) as anticipated by the Weissman patent. In order to anticipate a pending claim under any of the various subsections of 35 U.S.C. §102, a reference must teach every element recited in the claim. At least for the reasons discussed below, the Weissman reference is insufficient to anticipate the pending claims.

The Weissman patent is directed to a method and “device for *calibration of microscope slides* for use in accurate and repeatable position location and relocation of specific areas” of the calibrated slides (Abstract of Weissman). In that regard, the Weissman patent teaches a method of correcting *orthogonality errors* using a rectangular calibration slide having “visual fixation sites,” or fiducial marks (*see, e.g.,* the paragraph bridging columns 2 and 3 of Weissman).

As set forth at column 4, lines 9-34, the Weissman system uses fiducial marks located at the corners of a calibration slide to establish rotational errors for a specific stage or apparatus, *i.e.,* the fiducial marks or calibration indicia are integrated or incorporated into the calibration slide itself. In employing orthogonality error observations for the calibration slide, the Weissman system seeks “to compensate for deviations of specimen event locations *from orthogonally based locations*” as measured by a particular stage; in that regard, the Weissman patent fundamentally addresses what would ordinarily be understood as “normalization” procedures rather than “calibration” procedures (*see* Weissman: column 3, lines 62-67; column 4, lines 25-34). Specifically, the utility of the Weissman system is limited to specific stage and calibration slide combinations. If two different stages were “calibrated” using two different calibration slides, the methods taught in Weissman would not work; similarly, in accordance with the fair teachings of Weissman, two orthogonality “calibrations” for the same stage using different calibration slides would produce different error measurements.

Based at least upon the foregoing, Applicants submit that the Weissman patent fails to teach “collecting calibration data” as recited in claim 1. Additionally, the Weissman patent fails to teach or even to address “determining positioning and orthogonality errors from the calibration data” as recited in claim 1. In particular, the Weissman system is not operative to determine *positioning error* of any kind, and only contemplates corrections for orthogonality errors.

The Weissman patent fails to teach every element recited in the pending claims, and accordingly, the rejection of claims 1-7 under 35 U.S.C. §102(b) is improper. In addition to the reasons presented above with specific reference to claim 1, claims 2-7 recite additional features and elements; claims 2-7 are allowable for their respective recitations as well. Applicants submit that claims 1-7 are allowable at least for the reasons set forth above, and request that the rejection under 35 U.S.C. §102(b) be withdrawn.

The Rejection Under 35 U.S.C. §103(a)

As noted above, claims 8-19 stand rejected under 35 U.S.C. §103(a) as unpatentable over Weissman in view of Jansson. MPEP §706.02(j) sets forth the following criteria for establishing a *prima facie* case of obviousness under 35 U.S.C. §103(a): a motivation or suggestion to modify a single reference or to combine multiple references; a reasonable expectation that the modification or combination of references will produce an operative or successful result; and the references, when modified or combined, must teach or suggest every limitation recited in the claims.

At least because the suggestion to combine Jansson with Weissman is specious and because the combination fails to teach every element recited in the claims, Applicants submit that the rejections under 35 U.S.C. §103(a) are improper.

Various deficiencies of the Jansson reference have previously been addressed on the record in Applicants' Amendment dated August 12, 2003. Applicants provide a brief summary for the Examiner's convenience. The system set forth in Jansson employs stage motion to facilitate alignment of mosaic image tiles; this procedure relies upon a "calibrated image pixel size" for a particular objective lens (Jansson at column 5, lines 12-22). These "calibration" data are obtained from a look up table, relate only to an individual image pixel size, and are entirely unrelated to the calibration data set forth in the present application which are directed to measuring and modeling stage motion errors (*see, e.g.*, pages 11 through 15 of the present application). Similarly, the text of Jansson cited above discusses calculation of total mosaic image size based upon calibrated pixel size. While an operator may manipulate the mosaic image marker to frame an area of interest on the substrate, neither this nor any other portion of Jansson suggests the positioning and orthogonality error determination recited in the pending claims.

In rejecting claim 8 in the paragraph bridging pages 3 and 4 of the outstanding Office Action, the Examiner has cited, among other passages, the text at column 2, lines 15-21, of Jansson. Interestingly, this portion of Jansson illustrates a clear deficiency the Examiner has yet to appreciate. In accordance with the fair teachings of Jansson, the calibrated image pixel size (obtained from a look up table) determines the distance the stage must move for adjacent image segments--specifically, stage motion in Jansson is predetermined, and is entirely unaffected by

“adjustment parameters.” The Jansson system uses pixel size data to determine or otherwise to compute required distances in absolute terms, but neither teaches nor even contemplates making adjustments for stage or imaging apparatus movement errors (Jansson, column 3, lines 22-26). Consequently, the motion of the stage assembly in Jansson is neither related to, nor affected by, application of “the adjustment parameters” as recited in claim 8. The portion of the reference relied upon by the Examiner neither teaches nor suggests the subject matter recited in pending claim 8.

At least for the foregoing reasons, it would not have been obvious to combine the teachings of Jansson with the teachings of Weissman in the manner suggested by the Examiner. The only relevant teaching in Weissman is related to orthogonality errors, while Jansson does not consider error calculations, or compensation therefor, at all. Additionally, the references, even when considered in combination, fail to teach or to suggest every element recited in the pending claims as set forth in more detail below. Accordingly, the Examiner has failed to establish a *prima facie* case of obviousness, and the rejections under 35 U.S.C. §103(a) are improper.

Based at least upon the reasons articulated above with specific reference to claim 1, Applicants submit that the Weissman patent, while executing a “normalization” procedure of sorts, fails to teach “determining calibration data” as recited in claim 8. Additionally, the Weissman patent fails to teach “creating adjustment parameters *based on* the calibration data,” since those calibration data are neither taught nor contemplated in Weissman. Weissman further fails to teach “applying the adjustment parameters to position a first portion of the plurality of specimens within a scan area” as required by claim 8. Jansson fails to supply these deficiencies, since the pixel size information taught in Jansson is not used to create adjustment parameters of any kind. Further, even assuming, *arguendo*, that the combination of Weissman and Jansson is proper, the combined references still fail to teach or even to suggest “applying the adjustment parameters to position a . . . portion of the plurality of specimens within a scan area” as described above.

With respect to claim 14, Applicants respectfully submit that the Examiner’s exact position is difficult to decipher. In that regard, the Examiner has cited the Weissman patent as allegedly teaching “an adjustment algorithm *to modify movement of the staging area* to compensate for the calibration data;” on the other hand, the Examiner has also acknowledged

that the Weissman patent fails to teach “*a staging area [that] moves* relative to a camera” (page 4 of the outstanding Office Action; *citing* column 3, lines 5-13, of Weissman; emphasis supplied). Applicants note additionally that, in rejecting claim 8, the Examiner admitted that Weissman fails to teach “applying the adjustment parameters *to position a second portion* of the plurality of specimens *within a scan area*” (page 3 of the outstanding Office Action; emphasis supplied). Based at least upon the foregoing inconsistencies, Applicants are unable to fathom the Examiner’s perspective regarding the precise scope and contemplation of the Weissman patent.

In any event, Applicants respectfully submit that the Weissman patent fails to teach at least the following limitations called out in claim 14: collecting “positional and orthogonality calibration data from the staging area;” and creating “an adjustment algorithm to modify movement of the staging area to compensate for the calibration data.” The Jansson patent fails to supply these deficiencies. As set forth above, Jansson fails to provide compensation at all, and never addresses correction of errors in stage motion--indeed, positional correction is not considered in Jansson (column 3, lines 22-26). As noted above, the Jansson system is not operative to provide adjustments to the relative positions of structural elements of the scanning system using calibration data and adjustment parameters. The Jansson reference neither teaches nor suggests calibration data related to measuring and modeling stage motion errors (*see, e.g.*, pages 11 through 15 of the present application) and compensating therefor as recited in claim 14.

The combined Weissman and Jansson references fail to teach at least “positional and orthogonality calibration data” and a processor which “creates an adjustment algorithm to modify movement of the staging area to compensate for the calibration data.”

The Weissman and Jansson patents, whether considered individually or in combination, fail to teach every element recited in independent claims 8 and 14, and accordingly, the rejection of claims 8-19 under 35 U.S.C. §103(a) is improper. In addition to the reasons presented above with specific reference to claims 1, 8, and 14, dependent claims 9-13 and 15-19 recite additional features and elements neither taught nor suggest by the cited art; claims 9-13 and 15-19 are allowable for their respective recitations as well. Applicants submit that claims 8-19 are allowable at least for the reasons set forth above, and request that the rejection under 35 U.S.C. §103(a) be withdrawn.

CONCLUSION


Based upon the foregoing analysis, Applicants respectfully submit that claims 1-19 are allowable, and that the present application is currently in condition for allowance. The Examiner is encouraged to contact the undersigned at 858-509-4007 if it is believed that a discussion may advance the prosecution of this case.

Applicants believe that a fee is required at this time. Please apply any charges or credit any overpayments to Deposit Account No. 50-2212.

Respectfully submitted,

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